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REVIEWS.

Ornithology and Oölogy of New England. By *Edward A. Samuels.* Boston. Nichols & Noyes. 1867. 8vo. Illustrated.

We welcome this work as one long needed, and trust that it will prove the forerunner of a large series of similar ones in the various departments of Natural History. The demand for books on this and kindred subjects is now quite large, and fast increasing, and we only regret that the price of the present volume may put it above the reach of the large number of persons who would advantageously peruse its pages, if within their means. May we not hope that the enterprising publishers of the work, who deserve great praise for their present undertaking, will issue a cheaper edition, that it may become accessible to all?

The volume is gotten up in fine style, and no expense has been spared on the typography and paper. The four plates containing the illustrations of the eggs* are perfect gems of the art of wood-cutting in this country, and show to what perfection it can be carried. It is greatly to be regretted that the fifty or sixty illustrations of birds were not executed for the work with the same care, for they only serve to mar the beauty of the book, and are, with few exceptions, of very little value to the reader.

The character of the work is such as to instruct and interest; the scientific details and matters of classification are well arranged, and copied from the best authors, for which full credit is given. In fact, the author has, so far as we can judge, been honest with all his quotations and clippings from others, and in writing such a work originality in all its details would be almost an impossibility, and in the present state of ornithology wholly uncalled for. That part relating to the habits and nesting of our birds contains much of original observation and research. The practical bearing of many of the observations of the author renders them of great value to the farmer and fruit-grower, and will serve to remove many prejudices that have arisen regarding the comparative benefit and injury derived from the feathered inhabitants of our gardens and woods.* Thus, while the author's account of the habits of the "Poor Crow" may be the cause of many being destroyed at certain seasons of the year, his account of the food of the Robin will undoubtedly be the saving of the lives of thousands of these, by some, most loved, and by others, most persecuted of birds. We extract the following from the account of the habits of the Robin:—

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* These four plates contain representations of the eggs of the following birds: — Pigeon Hawk, Sparrow Hawk, Red-shouldered Hawk, Broad-winged Hawk, Great-crested Flycatcher, Blue Yellow-backed Warbler, Water Thrush, Black-throated Green Warbler, White-bellied Nuthatch, Red-bellied Nuthatch, White-throated Sparrow, Snow-bird, Tree Sparrow, Rose-breasted Grosbeak, Orchard Oriole, Rusty Blackbird, Canada Grouse, Killdeer Plover, Semipalmated Plover, American Woodcock, Wilson's Snipe, Upland Plover, Virginia Rail, Carolina Rail, Herring Gull, Laughing Gull, Kittiwake Gull, Wilson's Tern, Least Tern.

> Perhaps none of our birds are more unpopular with horticulturists than this; and I will here give the observations of different scientific men, and my own, to show that the prejudice against the bird is unjust and unfounded. Mr. Trouvelot, of Medford, Mass., who is engaged in rearing silkworms, for the production of silk, is troubled by the Robin to a degree surpassing most other birds. He has a tract of about seven or eight acres enclosed, and mostly covered with netting. He is obliged, in self-defence, to kill the birds which penetrate into the enclosure and destroy the worms. Through the season, probably ten robins, for one of all others, thus molest him; and, of scores of these birds which he has opened and examined, none had any fruit or berries in their stomachs,—nothing but insects. It is to be understood that this was not in a part of the summer when berries were unripe; on the contrary, it was all through the season. His land is surrounded with scrub-oaks and huckleberry-bushes. These latter were loaded with fruit, which was easier of access to the birds than the worms; but none was found in them. He says they came from all quarters to destroy his silkworms, and gave him more trouble than all the other birds together. He said that, in his opinion, if the birds were all killed off, vegetation would be entirely destroyed. To test the destructiveness of these marauders, as he reregarded them, he placed on a small scrub-oak near his door two thousand of his silkworms. (These, let me say, resemble, when small, the young caterpillar of the apple-tree moth.) In a very few days they were all eaten by Cat-birds and Robins,—birds closely allied, and of the same habits. This was in the berry season, when an abundance of this kind of food was easily accessible; but they preferred his worms. Why? Because the young of these, as well as those of most other birds, *must* be fed on animal food. Earthworms assist in the regimen; but how often can birds like the Robin, Cat-bird, Thrush, etc., get these? Any farmer knows, that, when the surface of the ground is dry, they go to the subsoil, out of the reach of birds; and it is not necessary here to say what proportion of the time the ground is very dry through the summer. Caterpillars, grubs of various kinds, and insects, therefore constitute the chief food of these birds; and of these, caterpillars and grubs being the most abundant, and most easily caught, furnish, of course, the larger proportion.
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> In fact, the Thrushes seem designed by nature to rid the surface of the soil of noxious insects not often pursued by most other birds. The warblers capture the insects that prey on the foliage of the trees; the flycatchers seize these insects as they fly from the trees: the swallows capture those which have escaped all these; the woodpeckers destroy them when in the larva state in the wood; the wrens, nuthatches, titmice, and creepers eat the eggs and young that live on and beneath the bark; but the thrushes subsist on those that destroy the vegetation on the surface of the earth. They destroy nearly all kinds of grubs, caterpillars, and worms that live upon the greensward and cultivated soil, and large quantities of crickets and grasshoppers before they have become perfect insects. The grubs of locusts, of harvest-flies, and of beetles, which are turned up by the plough or the hoe, and their pupæ when emerging from the soil; apple-worms, when they leave the fruit and crawl about in quest of new shelter; and those subterranean caterpillars, the cutworms, that come out of the earth to take their food,—all these, and many others, are eagerly devoured by the Robin and other Thrushes. The cutworms emerge from the soil during the night to seek for food; and the Robin, which is one of the earliest birds to go abroad in the morning, is very diligent at the dawn of day in hunting for these vermin before they have gone back into their retreat. The number of these destructive grubs is immense. "Whole cornfields," says Dr. Harris, "are sometimes laid waste by them. Cabbage-plants, till they are grown to a considerable size, are very apt to be cut off and

destroyed by them. Potato-vines, beans, beets, and various other culinary plants, suffer in the same way." The services of the robins, in destroying these alone, would more than pay for all the fruit they devour. Indeed, during the breeding season, a robin is seldom seen without having in his mouth one of these caterpillars, or some similar grub, which he designs for his young; and as the Robin often raises three broods of young during the season, his species must destroy more of this class of noxious insects than almost all other birds together. In my own gardening experiences, I have had my full share of cutworms; and I have always noticed the Robin, Brown Thrush, and Cat-bird busy early in the morning, — almost before other birds are out of their feather-beds, figuratively speaking, — catching these vermin and eating them, or carrying them for food to their young.

THE CRETACEOUS FORMATION OF THE ENVIRONS OF SIOUX CITY, OF THE MISSION OF OMAHAS AND OF TEKAMA, ON THE BORDERS OF MISSOURI. By *Jules Marcou.* From the Bulletin of the Geological Society of France. 1866. 8vo, pp. 15. With a plate.

In this and a previous paper,* the author shows that there is a remarkable discrepancy between the usually accepted laws of the geological succession of animals and plants, and the natural sequence of the rocks containing them. The facts are thus stated in the present article: —

> Between Omaha City, Nebraska, and Sioux City, is a fresh-water formation containing a flora entirely composed of genera, which, in Europe, have appeared only at the epoch of the Miocene (middle) Tertiary Period, but which in America, however, is found in the middle of the Cretaceous Period, at the base of the chalk formation.

The steps that led to this discovery are detailed quite fully by Prof. F. V. Hayden, in the American Journal of Science for March, 1867.

LEPIDOPTEROLOGICAL NOTES AND DESCRIPTIONS, I, II. *By Aug. R. Grote* and *Coleman T. Robinson.* 8vo, pp. 30. 1865-6. With five plates.

NOTES ON THE SPHINGIDÆ OF CUBA. *By Aug. R. Grote.* 8vo. 1865. With two plates.

NOTES ON THE ZYGÆNIDÆ OF CUBA. *By Aug. R. Grote.* 8vo, pp. 16.

NOTES ON THE LEPIDOPTERA OF AMERICA. By *A. R. Grote* and *Coleman T. Robinson.* New York, 1867. 8vo, pp. 35. With two plates.

In a series of papers, of which we select the titles of but a few, published by these authors in the Proceedings of the Entomological Society of Philadelphia, and the Annals of the Lyceum of Natural History of New York, are descriptions of new and interesting forms of our native moths, accompanied by admirably executed lithographic plates, wherein are figured many of the rarer species, either new or previously described.

The authors have delineated many of the forms of that beautiful and

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*A Geological Reconnoisance in Nebraska. From the Bulletin of the Geological Society of France, 1864.